Date: 12/08/10
Location: Jensen areas
Aircraft: Loki
Pilot: Garrison Hoe & Arion Mangio
Flights: 5 Loki

Link to Flight Data

Garrison, Arion, Rohit, and myself took Loki to UMORE Park today. Weather was good; sunny, calm winds, temps around 10F. Heavy snow cover and no plowing made Tri Valley and Jensen inaccessible. We ended up operating off a paved side road near Jensen. This was a little dicey, with brush on one side and snow on both sides. If there had been any wind, this wouldn't have worked.

The objectives for the deployment were:

1. Run FDI filter repeats for Rohit, including more aggressive MRAC controllers.

We completed 5 flights in short order; we were able to run programs on both legs of the pattern since there was no wind aloft. All programs shared the same fault injection and command sequence as follows:

1. A roll doublet with no fault.
2. 10 deg fault on right aileron (right roll).
3. Two roll doublets with fault engaged

Loki Flight 43: FDI, LQR controller

Loki Flight 44: FDI, baseline (PID) controller

Loki Flight 45: FDI, LQR + MRAC 0. This is the same MRAC version that was flown previously.

Loki Flight 46: FDI, LQR + MRAC 1. More aggressive MRAC.

Loki Flight 47: FDI, LQR + MRAC 2. Even more aggressive MRAC.

Issues:

1. One instance of ground station freezing due to bad checksum; Selected "reconnect" and operation resumed.
2. Several instances of altimeter initializing to -2000m and GPS checksum errors.
3. After one autopilot engagement on Flight 46, the pilot did not appear to have positive manual control (attempting to roll). The airplane was a long ways out (~.4-.5 mile). Positive control was asserted after a few seconds, and the problem couldn't be repeated, so its unclear what happened. The Rx Mux? defaults to manual control if the switch signal is disrupted or the receiver goes into failsafe. Its possible a short R/C dropout occurred. The receivers do log this data, and I have on order a device to download this post flight to verify the R/C link performance.